



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,390	12/17/2003	Young-June Yu	ITDE-PNV100US	8003
23122	7590	05/23/2005	EXAMINER	
RATNERPRESTIA			LEE, PATRICK J	
P O BOX 980			ART UNIT	
VALLEY FORGE, PA 19482-0980			PAPER NUMBER	
			2878	

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/738,390

Applicant(s)

YU, YOUNG-JUNE

Examiner

Patrick J. Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1203.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. Figures 14a & 14b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 10, & 16 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,929,449 to Huang.

Huang discloses an imaging device comprising photodiodes (36), with a plurality of switches (38) controlled by gate driver (28) and control circuit (29) to produce an output.

With respect to claim 1, Huang disclose a plurality of photodiodes (36) as a plurality of electron sensing elements for receiving energy from an electron energy source. Huang also discloses a plurality of switches (38) as a plurality of switching elements positioned between sensing elements (36). The device by Huang is setup such that outputs from two photodiodes (36) in a certain row can be read out to multiplexer (32) and amplifier (30) should at least one of the switches (38) is activated.

With respect to claim 2, Huang discloses the imager (20) to comprise a plurality of pixels (22).

With respect to claim 3, Huang illustrates the sensing elements (36) to be disposed in a plurality of columns and rows.

With respect to claim 4, Huang discloses sensing elements (36) to comprise a radiation transducer ( $C_{SE}$ ) as an electron sensing planar pad.

With respect to claim 5, Huang discloses the imager (20) to comprise a plurality of pixels (22).

With respect to claim 6, Huang discloses switch (38) as a TFT switch controlled by gate pulses.

With respect to claim 7, Huang discloses photodiode (36) to comprise a storage capacitor ( $C_{ST}$ ).

With respect to claim 10, Huang discloses photodiode (36) to comprise a storage capacitor ( $C_{ST}$ ) to serve as a charge collection element to store the energy before the conversion to a voltage signal configured for read-out.

With respect to claim 16, Huang disclose a plurality of photodiodes (36) as a plurality of electron sensing elements for receiving energy from an electron energy source. Huang also discloses a plurality of switches (38) as a plurality of switching elements positioned between sensing elements (36). The device by Huang is setup such that outputs from two photodiodes (36) in a certain row can be read out to multiplexer (32) and amplifier (30) should at least one of the switches (38) is activated.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8-9, 11-12, & 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,929,449 to Huang.

Huang discloses the device as described in the discussion of claims 1-7, 10, & 16.

With respect to claims 8-9, Huang does not explicitly disclose the use of the device in a progressive scan or a snapshot pseudo-interlace mode. However, such would have been obvious to one of ordinary skill in the art in order to grant the device versatility and improved readout ability with greater resolution.

With respect to claims 11-12 & 17-18, the modified Huang does not explicitly disclose the use of a correlated double sampling element, but such would have been obvious to one of ordinary skill in the art because such an element would improve the signal-to-noise (S/N) ratio by removing static fixed noise and several types of temporal noise from the sensor's output.

7. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,875,093 to Koishi et al in view of US 5,929,449 to Huang.

With respect to claim 13, Koishi et al disclose an imaging device comprising photocathode (18), MCP (23), high-speed light receiving device (30) as an imaging device, and display device (33). However, Koishi et al do not explicitly disclose an imaging device (30) comprising a plurality of switching elements and a plurality of electron sensing elements. Such is disclosed by Huang, as Huang discloses a plurality of photodiodes (36) as a plurality of electron sensing elements for receiving energy from an electron energy source. Huang also discloses a plurality of switches (38) as a plurality of switching elements positioned between sensing elements (36). The device by Huang is setup such that outputs from two photodiodes (36) in a certain row can be read out to multiplexer (32) and amplifier (30) should at least one of the switches (38) is activated. To modify the teachings of Koishi et al with those of Huang would have been obvious to one of ordinary skill in the art as Huang discloses an imaging device with improved image resolution with a reduction in noise (see column 3, lines 1-29).

With respect to claim 14-15, the modified Koishi et al do not explicitly disclose the use of a correlated double sampling element, but such would have been obvious to one

Art Unit: 2878

of ordinary skill in the art because such an element would improve the signal-to-noise (S/N) ratio by removing static fixed noise and several types of temporal noise from the sensor's output.

### ***Conclusion***


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick J. Lee  
Examiner  
Art Unit 2878

PJL  
May 16<sup>th</sup>, 2005

  
Stephane B. Allen  
Primary Examiner